

CLAIMS

1. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

5 (a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,

(b) the output polarizer angle γ is at an angle of 135° minus the twist angle of the said liquid crystal cell, and

(c) the product of the cell gap d and birefringence Δn has a value of between 1.1

10 and 1.5 microns.

2. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

15 (a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,

(b) the output polarizer angle γ is at an angle of 135° minus the twist angle of the said liquid crystal cell, and

(c) the product of the cell gap d and birefringence Δn has a value of between 0.6

20 and 1.0 microns.

3. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director

5 of the said liquid crystal cell,

(b) the output polarizer angle γ is at an angle of 45° minus the twist angle of the said liquid crystal cell, and

(c) the product of the cell gap d and birefringence Δn has a value of between 0.9 and 1.3 microns.

10

4. A liquid crystal display comprising an input polarizer, a rear reflector, and a liquid crystal cell in between said input polarizer and said reflector characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director

15 of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell has a value in between -60° and 60° , and

(c) the product of the cell gap d and birefringence Δn has a value of between 0.45 and 0.65 microns.

20

5. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 65° and 85° ,

(c) the output polarizer angle γ is between 20° and 40° relative to the input director of the said liquid crystal cell, and

(d) the product of the cell gap d and birefringence Δn has a value of between 1.1 and 1.5 microns.

6. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 80° and 100° ,

(c) the output polarizer angle γ is between 35° and 55° relative to the input director of the said liquid crystal cell, and

(d) the product of the cell gap d and birefringence Δn has a value of between 1.1 and 1.5 microns.

7. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director
5 of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 80° and 100° ,

(c) the output polarizer angle γ is between -35° and -55° relative to the input
director of the said liquid crystal cell, and

(d) the product of the cell gap d and birefringence Δn has a value of between 0.9
10 and 1.3 microns.

8. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director
15 of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 120° and 140° ,

(c) the output polarizer angle γ is between 80° and 100° relative to the input
director of the said liquid crystal cell, and

(d) the product of the cell gap d and birefringence Δn has a value of between 1.1
20 and 1.5 microns.

9. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input director

5 of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 65° and 85° ,

(c) the output polarizer angle γ is between 20° and 40° relative to the input director of the said liquid crystal cell, and

(d) the product of the cell gap d and birefringence Δn has a value of between 0.7

10 and 0.9 microns.

10. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

15 (a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 80° and 100° ,

(c) the output polarizer angle γ is between 35° and 55° relative to the input director of the said liquid crystal cell, and

20 (d) the product of the cell gap d and birefringence Δn has a value of between 0.7 and 0.9 microns.

11. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

(a) the input polarizer angle α is between 35° and 55° relative to the input
5 director of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 80° and 100° ,

(c) the output polarizer angle γ is between -35° and -55° relative to the input
director of the said liquid crystal cell, and

(d) the product of the cell gap d and birefringence Δn has a value of between 1.0
10 and 1.2 microns.

12. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

15 (a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,

(b) the twist angle of the said liquid crystal cell is between 80° and 100° ,

(c) the output polarizer angle γ is between 35° and 55° relative to the input
director of the said liquid crystal cell, and

20 (d) the product of the cell gap d and birefringence Δn has a value of between 0.75 and 0.95 microns.

13. A liquid crystal display comprising an input polarizer, an output polarizer, and a liquid crystal cell in between said input and output polarizers characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

- 5 (a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,
- (b) the twist angle of the said liquid crystal cell is between -5° and 15° ,
- (c) the output polarizer angle γ is between -35° and -55° relative to the input director of the said liquid crystal cell, and
- 10 (d) the product of the cell gap d and birefringence Δn has a value of between 0.9 and 1.0 microns.

14. A liquid crystal display comprising an input polarizer, a rear reflector, and a liquid crystal cell in between said input and reflector characterized by a twist angle, a cell thickness and a birefringence of the liquid crystal, such that

- 15 (a) the input polarizer angle α is between 35° and 55° relative to the input director of the said liquid crystal cell,
- (b) the twist angle of the said liquid crystal cell is between -5° and 15° , and
- (c) the product of the cell gap d and birefringence Δn has a value of between 0.4
- 20 and 0.8 microns.

15. A liquid crystal display as claimed in any of claims 1 to 14 wherein the input polarizer angle is $\alpha \pm N\pi$ where N can be any positive or negative integer.

16. A liquid crystal display as claimed in any of claims 1 to 15 wherein the output
5 polarizer angle is $\gamma \pm N\pi$ where N can be any positive or negative integer.